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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/926,297	12/26/2001	Yasuji Hiramatsu	214768US0PCT	4971

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EXAMINER

SOWARD, IDA M

ART UNIT PAPER NUMBER

2822

DATE MAILED: 04/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/926,297

Applicant(s)

HIRAMATSU ET AL.

Examiner

Ida M Soward

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 January 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) _____ is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-3 and 5-16 is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other:

DETAILED ACTION

This Office Action is in response to the Applicants' amendment filed on January 16, 2003.

Specification

This application does not contain an abstract of the disclosure as required by 37 CFR 1.72(b). An abstract on a separate sheet is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Does "said substrate" in line 5 of claim 1 refer to the first substrate or the second substrate mentioned in line 3 of claim 1?

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 5, 9-11, 13-14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deevi et al. (5,408,574) in view of Bishop (US 6,182,340 B1), Sumino et al. (6,107,638), Sumino et al. (6,086,990) and Beall et al. (US 2002/0010073 A1).

Deevi et al. teach a ceramic heater having a conductive ceramic heating element 2 formed on a surface of a ceramic substrate 1 (Figure 1, col. 4, lines 24-36). However, Deevi et al. fail to teach a non-oxide ceramic containing oxygen, a ceramic substrate having a porosity and a pore diameter. Bishop teaches non-oxide ceramic containing oxygen (col. 11, lines 28-40) and rare earth metal (claim 1). Sumino et al. (6,107,638) teach a ceramic substrate having a porosity in the range of 5% or less and a Peltier device (col. 14, lines 31-35). Sumino et al. (6,086,990) a BN ceramic substrate containing oxygen in the range of 0.05 to 10% by weight (col. 7, lines 12-35). Beall et al. teach a pore diameter of 50 μ m or less (page 1, paragraph [0011]). Since Deevi et al., Bishop, Sumino et al. (6,107,638), Sumino et al. (6,086,990) and Beall et al. are from the same field of endeavor (ceramics), the purpose disclosed by Beall et al. would have been recognized in the pertinent art of Deevi et al., Bishop and Sumino et al. (6,107,638) and Sumino et al. (6,086,990). Therefore, it would have been obvious to modify the ceramic heater of Deevi et al. by incorporating the non-oxide ceramic containing oxygen of Bishop, the ceramic substrate having a porosity of Sumino et al. (6,107,638), the oxygen range of Sumino et al. (6,086,990) and the pore diameter of Beall et al. to improve thermal expansion coefficient properties (page 1, paragraph [0012]).

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Claims 2-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deevi et al. (5,408,574), Bishop (US 6,182,340 B1), Sumino et al. (6,107,638), Sumino et al. (6,086,990) and Beall et al. (US 2002/0010073 A1) as applied to claim 1 above, and further in view of Autenrieth et al. (US 6,176,140 B1).

Deevi et al., Bishop, Sumino et al. (6,107,638), Sumino et al. (6,086,990) and Beall et al. teach all mentioned in the rejection above. However, Deevi et al., Bishop, Sumino et al. (6,107,638), Sumino et al. (6,086,990) and Beall et al. fail to teach nitride ceramic. Autenrieth et al. teach a nitride and non-oxide carbide ceramic (col. 2, lines 11-17). Since Deevi et al., Bishop, Sumino et al. (6,107,638), Sumino et al. (6,086,990), Beall et al. and Autenrieth et al. are from the same field of endeavor (ceramics), the purpose disclosed by Autenrieth et al. would have been recognized in the pertinent art of Deevi et al., Bishop, Sumino et al. (6,107,638), Sumino et al. (6,086,990) and Beall et al. Therefore, it would have been obvious to modify the ceramic heater of Deevi et al., the non-oxide ceramic containing oxygen of Bishop, the ceramic substrate having a porosity of Sumino et al., the oxygen range of Sumino et al. (6,086,990) and the pore diameter of Beall et al. by incorporating the nitride ceramic of Autenrieth et al. to provide a high-strength biocompatible ceramic (col. 2, lines 11-12).

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Deevi et al. (5,408,574), Bishop (US 6,182,340 B1), Sumino et al. (6,107,638), Sumino et al. (6,086,990) and Beall et al. (US 2002/0010073 A1) as applied to claim 1 above, and further in view of Balaba et al. (5,492,730).

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Deevi et al., Bishop, Sumino et al. (6,107,638), Sumino et al. (6,086,990) and Beall et al. teach all mentioned in the rejection above. However, Deevi et al., Bishop, Sumino et al. (6,107,638), Sumino et al. (6,086,990) and Beall et al. fail to teach ceramic substrate being used within the temperature range. Balaba et al. teach ceramic substrate being used within the temperature range of 100 to 700°C (col. 12, claim 8). Since Deevi et al., Bishop, Sumino et al. (6,107,638), Sumino et al. (6,086,990), Beall et al. and Balaba et al. are from the same field of endeavor (ceramics), the purpose disclosed by Balaba et al. would have been recognized in the pertinent art of Deevi et al., Bishop, Sumino et al. (6,107,638), Sumino et al. (6,086,990) and Beall et al. Therefore, it would have been obvious to modify the ceramic heater of Deevi et al., the non-oxide ceramic containing oxygen of Bishop, the ceramic substrate having a porosity of Sumino et al., the oxygen range of Sumino et al. (6,086,990) and the pore diameter of Beall et al. by incorporating the temperature range of Balaba et al. to enhance thermal protection (abstract).

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Deevi et al. (5,408,574), Bishop (US 6,182,340 B1), Sumino et al. (6,107,638), Sumino et al. (6,086,990) and Beall et al. (US 2002/0010073 A1) as applied to claim 1 above, and further in view of Hoshiya et al. (5,843,589).

Deevi et al., Bishop, Sumino et al. (6,107,638), Sumino et al. (6,086,990) and Beall et al. teach all mentioned in the rejection above. However, Deevi et al., Bishop, Sumino et al. (6,107,638), Sumino et al. (6,086,990) and Beall et al. fail to teach a

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substrate thickness. Hoshiya et al. teach a ceramic substrate has a thickness in the range of 25mm or less, and a diameter in the range of 200mm or more (col. 6, lines 31-46). Since Deevi et al., Bishop, Sumino et al. (6,107,638), Sumino et al. (6,086,990), Beall et al. and Hoshiya et al. are from the same field of endeavor (ceramics), the purpose disclosed by Hoshiya et al. would have been recognized in the pertinent art of Deevi et al., Bishop, Sumino et al. (6,107,638), Sumino et al. (6,086,990) and Beall et al. Therefore, it would have been obvious to modify the ceramic heater of Deevi et al., the non-oxide ceramic containing oxygen of Bishop, the ceramic substrate having a porosity of Sumino et al., the oxygen range of Sumino et al. (6,086,990) and the pore diameter of Beall et al. by incorporating the substrate thickness of Hoshiya et al. to provide excellent reliability (abstract).

Claims 8, 12 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deevi et al. (5,408,574), Bishop (US 6,182,340 B1), Sumino et al. (6,107,638), Sumino et al. (6,086,990) and Beall et al. (US 2002/0010073 A1) as applied to claim 1 above, and further in view of Fukasawa et al. (5,310,453).

Deevi et al., Bishop, Sumino et al. (6,107,638), Sumino et al. (6,086,990) and Beall et al. teach all mentioned in the rejection above. However, Deevi et al., Bishop, Sumino et al. (6,107,638), Sumino et al. (6,086,990) and Beall et al. fail to teach a plurality of through holes and lifter pins for a semiconductor wafer. Fukasawa et al. teach a plurality of through holes (Figure 1) and lifter pins for a semiconductor wafer (cols. 11-12, lines 66-68 and 1-4, respectively) as well as an RF electrode and a chuck top layer

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formed on the surface of a ceramic substrate (col. 1, lines 21-36). Since Deevi et al., Bishop, Sumino et al. (6,107,638), Sumino et al. (6,086,990), Beall et al. and Fukasawa et al. are from the same field of endeavor (ceramics), the purpose disclosed by Fukasawa et al. would have been recognized in the pertinent art of Deevi et al., Bishop, Sumino et al. (6,107,638), Sumino et al. (6,086,990) and Beall et al. Therefore, it would have been obvious to modify the ceramic heater of Deevi et al., the non-oxide ceramic containing oxygen of Bishop, the ceramic substrate having a porosity of Sumino et al., the oxygen range of Sumino et al. (6,086,990) and the pore diameter of Beall et al. by incorporating the plurality of through holes and lifter pins of Fukasawa et al. to reduce accumulated residual charge (col. 1, lines 37-47).

Response to Arguments

Applicant's arguments filed 1-16-03 have been fully considered but they are not persuasive.

In response to applicant's arguments concerning references Bishop, Beall et al., Autenrieth et al., Sumino '990, Sumino '638, Balaba et al., Hoshiya et al. and Fukasawa et al. against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

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Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following patents are cited to further show the state of the art with respects to non-oxide ceramics:

Deevi et al. (5,880,439)

Matsushita et al. (4,555,358)

Sawamura et al. (5,756,215)

Tanaka et al. (6,025,579).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ida M Soward whose telephone number is 703-305-3308. The examiner can normally be reached on Monday - Thursday, 6:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on 703-308-4905. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

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April 7, 2003



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